Having described the invention, the following is claimed:

1. In a system for sterilizing or microbially deactivating instruments and devices, said system having a circulation system for circulating a microbial deactivation fluid through a chamber for containing said instruments and devices, said chamber forming a portion of said circulation system, a fluid over-flow and make-up air assembly, comprised of:

a manifold having an inner cavity that is in fluid communication with said circulation system;

an overflow port in said manifold;

an overflow valve assembly disposed in said manifold allowing fluid flow from said cavity to said overflow port when a pressure in said cavity exceeds a pressure in said overflow port by a predetermined amount; and

a filter assembly attached to said manifold, said filter assembly having a filter valve assembly in communication with said cavity, said filter assembly operable to allow air through said filter assembly into said cavity when the pressure within said cavity is a predetermined amount less than the pressure within said filter assembly.

2. A system as defined in claim 1, wherein a portion of said valve assembly is exposed to the interior of said filter assembly and a portion of said valve assembly is exposed to said cavity, said interior assembly being sterile.

3. A system as defined in claim 1, wherein said filter assembly is releasably mounted to said manifold.

4. A system as defined in claim 1, further comprising an overflow sensing element mounted to said manifold, said first sensing element operable to sense the flow of liquid through said overflow port.

5. A system as defined in claims 1 or 4, further comprising a circulation sensing element mounted to said manifold operable to sense when fluid is within said cavity.

6. A system as defined in claim 1, further comprising a circulation port in said manifold, said port communicating at one end to said cavity and at the other end to said circulation system to form a fluid path from said circulation system through said cavity and circulation port back to said circulation system, wherein said microbial deactivation fluid flows through said cavity during a deactivation cycle of said system.

7. A system as defined in claim 1, wherein said overflow valve assembly and said filter valve assembly are formed of like components.

8. A system as defined in claim 1, wherein said manifold is in fluid communication with said chamber.

9. A system as defined in claim 8, wherein said cavity in said manifold includes a semi-hemispherical portion, and said overflow port and said overflow valve assembly are disposed above said semi-hemispherical portion.

10. A system as defined in claims 1, 2, 3 or 8, wherein said microbial deactivation fluid is peracetic acid.

11. A filter assembly for use on a sterilization or microbial deactivation apparatus for providing filtered air thereto, said filter assembly having an air inlet, an air outlet and an air passage extending between said air inlet and said air outlet, a filter medium disposed within said air passage between said air inlet and said air outlet, said bacteria-retentive filter medium, a directional valve assembly disposed within said passage between said filter medium and said air outlet for regulating the flow of air through said passage, said valve assembly permitting air flow only in a direction from said air inlet to said air outlet, said air passage between said filter medium and said directional valve assembly being sterile or microbially deactivated.

12. A filter assembly as defined in claim 11, wherein said filter medium is a bacteria-retentive filter.

13. A filter assembly as defined in claim 12, wherein said filter medium has a minimum filter efficiency of 99.97% for 0.3-micron particles.

14. A filter assembly as defined in claim 13, wherein said filter medium is PTFE or PVDF.

15. A filter assembly for use on a sterilization or microbial deactivation system for providing filtered air thereto, said assembly comprised of:

a filter canister containing a filter medium, said filter canister having an air inlet opening and an outlet opening;

a mounting assembly attached to said canister having a fluid passage therethrough, said fluid passage having a first end and a second end, said first end of said fluid passage being in fluid connection with said outlet opening of said canister; and

a directional valve assembly disposed within said fluid passage between said first end and said second end for regulating flow through said fluid passage, said valve assembly allowing only flow in a direction from said first end to said second end of said fluid passage, the portion of said fluid passage between said valve assembly and said filter medium being sterilized or microbially deactivated.

16. A filter assembly as defined in claim 15, wherein said filter medium is a bacteria-retentive filter.

17. A filter assembly as defined in claim 16, wherein said filter medium has a minimum filter efficiency of 99.97% for 0.3-micron particles.

18. A filter assembly as defined in claim 17, wherein said filter medium is PTFE or PVDF.

19. In a system for sterilizing or microbially deactivating instruments and devices, said system having a circulation system for circulating a microbial deactivation fluid through a chamber for containing said instruments and devices, said chamber forming a portion of said circulation system, a fluid over-flow and make-up air assembly, comprised of:

a filter assembly for providing air to said circulation system, said filter assembly having an air inlet, an air outlet and an air passage extending between said air inlet and said air outlet, a filter medium disposed within said air passage between said air inlet and said air outlet, a directional valve assembly disposed within said passage between said filter medium and said air outlet for regulating the flow of air through said passage, said valve assembly permitting air flow only in a direction from said air inlet to said air outlet, said air passage between said filter medium and said directional valve assembly being sterile or microbially deactivated, said filter assembly being mounted to said system with said air outlet in fluid communication with said circulation system.

20. A system as defined in claim 19, wherein said filter medium is a bacteria-retentive filter.

21. A system as defined in claim 20, wherein said filter medium has a minimum filter efficiency of 99.97% for 0.3-micron particles.

22. A system as defined in claim 21, wherein said filter medium is PTFE or PVDF.